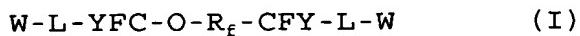


CLAIMS

1. Use for improving the hydro- and oil-repellence properties of substrata with a low surface energy having a critical wetting tension lower than 40 mN/meter, of (per)fluoro-polyether mono- and bifunctional derivatives having the following structures:



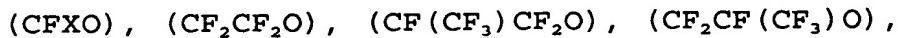
wherein:

L is a linking organic group $-CO-NR'-\left(CH_2\right)_q-$, with R'=H or C₁-C₄ alkyl; q is an integer comprised between 1 and 8, preferably 1-3;

Y=F, CF₃;

W is a $-Si(R_1)_\alpha(OR_2)_{3-\alpha}$ group with $\alpha=0,1,2$, R₁ and R₂ equal to or different from each other are C₁-C₆ alkyl groups, optionally containing one or more ether O, C₆-C₁₀ aryl groups, C₁-C₁₂ alkyl-aryls or aryl-alkyls;

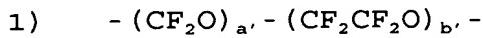
R_f has a number average molecular weight in the range 200-5,000, preferably 300-2,000 and it comprises repeating units having at least one of the following structures, statistically placed along the chain:



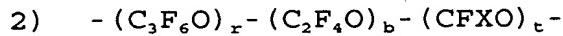
wherein X = F, CF₃.

2. Use according to claim 1 wherein Rf has one of the follo-

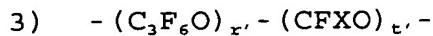
wing structures:



with a'/b' comprised between 0.5 and 2, extremes included, a' and b' being integers such to give the above mentioned molecular weight;



with $r/b = 0.5-2.0$; $(r+b)/t$ is in the range 10-30, b , r and t being integers such as to give the above mentioned molecular weight, X has the above indicated meaning;



t' can be 0;

when t' is different from 0 then $r'/t' = 10-30$, r' and t' being integers such to give the above mentioned molecular weight; X has the above indicated meaning;

3. Use according to claims 1-2 wherein in structure (II) the other end group is of T-O- type, wherein T is a (per)fluoroalkyl group selected from: $-\text{CF}_3$, $-\text{C}_2\text{F}_5$, $-\text{C}_3\text{F}_7$, $-\text{CF}_2\text{Cl}$, $-\text{C}_2\text{F}_4\text{Cl}$, $-\text{C}_3\text{F}_6\text{Cl}$; optionally one or two F atoms, preferably one, can be replaced by H.
4. Use according to claims 1-3 wherein the compounds (I) and (II) are used in mixture.
5. Use according to claims 1-4 wherein the perfluoropolyether derivatives have formula (I) with R_f having structu-

re (3).

6. Use according to claims 1-5 wherein the substrata having a low surface energy are selected from the groups consisting of:
polytetrafluoroethylene, polyolefins, polyolefine elastomers, thermoplastic copolymers of tetrafluoroethylene, thermoplastic homopolymers and copolymers of vinylidene-fluoride or of chlorotrifluoroethylene.
7. Use according to claims 1-6 wherein the (per)fluoro-polyether derivatives are applied on the substrata by brushing, spraying, padding.
8. Use according to claims 1-7 wherein the (per)fluoropoly-ether derivatives are used in formulations comprising solvents or water/solvent mixtures.
9. Use according to claim 8 wherein the solvents are polar and are selected from the following classes:
aliphatic alcohols having from 1 to 6 carbon atoms; aliphatic glycols having from 2 to 8 carbon atoms, optionally having an esterified hydroxyl; ketones or esters having from 3 to 10 carbon atoms.
10. Use according to claims 8-9 wherein as water/solvent mixtures, ketone/water or alcohol/water mixtures in a ratio by volume between 10:90 and 90:10 are used.
11. Use according to claims 8-10 wherein in the formulations

the concentration of the (per)fluoropolyethers of formula (I) and (II) is generally in the range 0.1-30% by weight.

12. Use according to claims 1-11 wherein the amount of (per)-fluoropolyether compound applied on the substratum surface is in the range 0.1-20 g/m².
13. Use according to claims 1-12 wherein the polar solvent is combined with water, optionally in the presence of a silanization catalyst.
14. Use according to claims 1-12 wherein a thermal treatment cycle to favour the crosslinking is used.